

Translation

PATENT COOPERATION TREATY

PCT/JP2003/010066



PCT

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference SF-964	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/JP2003/010066	International filing date (day/month/year) 07 August 2003 (07.08.2003)	Priority date (day/month/year) 21 August 2002 (21.08.2002)
International Patent Classification (IPC) or national classification and IPC C09D 183/04, 183/12, 185/00		
Applicant JSR CORPORATION		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.	RECEIVED OIPE/IAP
2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.	SEP 02 2005
3. This report is also accompanied by ANNEXES, comprising:	
a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>4</u> sheets, as follows:	
<input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).	
<input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.	
b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).	
4. This report contains indications relating to the following items:	
<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input type="checkbox"/> Box No. VIII	Certain observations on the international application

Date of submission of the demand 06 January 2004 (06.01.2004)	Date of completion of this report 01 September 2004 (01.09.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2003/010066

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language _____, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☐ The international application as originally filed/furnished
- ☒ the description:
- pages _____ 1-42 _____, as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- pages _____ 3 _____, as originally filed/furnished
- pages* _____, as amended (together with any statement) under Article 19
- pages* _____ 1, 4-5 _____ received by this Authority on _____ 30 April 2004 (30.04.2004)
- pages* _____ received by this Authority on _____
- ☐ the drawings:
- pages _____, as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☒ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☒ the claims, Nos. _____ 2 _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP 03/10066

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	3	YES
	Claims	1, 4, 5	NO
Inventive step (IS)	Claims		YES
	Claims	1, 3-5	NO
Industrial applicability (IA)	Claims	1, 3-5	YES
	Claims		NO

2. Citations and explanations

- Document 1: WO 99/41322 A (Toto Ltd.), 19 August 1999
- Document 2: JP 11-262669 A (Sumitomo Osaka Cement Co., Ltd.), 28 September 1999
- Document 3: JP 2000-336313 A (Toppan Printing Co., Ltd.), 5 December 2000
- Document 4: JP 61-26637 A (Suwa Seikosha Co., Ltd.), 5 February 1986
- Document 5: JP 63-12671 A (YK TSB), 20 January 1988
- Document 6: JP 2002-161238 A (Matsushita Electric Works, Ltd.), 4 June 2002
- Document 7: JP 2001-192616 A (JSR Corp.), 17 July 2001

Documents 1-7 are cited in the international search report.

Document 1 discloses coatings for forming photo-catalytic hydrophilic coating films which include crystalline titania (a "constituent (a)"), an amorphous titania precursor such as a partial hydrolysate of tetraethoxytitanium or the like and a precursor which can be converted to a compound having a siloxane bond, such as methyltrimethoxysilane (a "constituent (c)"), and indicates that a hydrolysis catalyst or the like can also be included.

Document 2 discloses liquid photocatalytic coatings which contain fine anatase titanium oxide particles of an average particle size of 100 nm or less (a "constituent (a)", a hydrolysate of a Ti alkoxide and a hydrolysate of an Si alkoxide (a "constituent (c)"), and indicates that an acid catalyst or alkali catalyst can optionally be added. As the hydrolysate of a Ti alkoxide, "a liquid hydrolysate of titanium alkoxide with the addition of water and a catalyst" is used.

Document 3 discloses coating compositions which include ultrafine particles with a high refractive index, such as indium oxide or crystalline titanium oxide with an average particle size of 1-50 nm (a "constituent (a)"), a metal alkoxide $M(OR)_n$, where M is Ti, and a hydrolysate thereof, and an organosilicon compound represented by $R'_xSi(OR)_y$ (a "constituent (c)") and a hydrolysate thereof, and indicates that an organic catalyst can also be added.

Document 4 describes coating compositions which contain silica of a colloidal particle size (a "constituent (a)"), a titanium alcoholate, a silane compound represented by a general formula (I) (a "constituent (c)"), and magnesium, which functions as a latent catalyst (a "catalyst").

Document 5 discloses inorganic coatings comprising a product of reaction of a partially hydrolysed silane compound and a titanium alkoxide (equivalent to "constituents (b) and (c)"), and in an example silica powder (a "constituent (a)") is also added. The use of an acid catalyst during hydrolysis is also mentioned.

Document 6 discloses coatings containing an organo-metallic compound such as a titanium alkoxide, a silicone resin comprising a partial hydrolysate of a tetra-functional hydrolysable organosilane (a "constituent (c)") and an inorganic filler (a "constituent (a)"), and also

mentions the addition of a hardening catalyst.

Document 7 discloses coating compositions which contain a photocatalyst (a "constituent (a)"), an organosilane or hydrolysate thereof (a "constituent (c)") and an organosilane oligomer with a weight-average molecular weight of 300-100,000, having an SiO bond and having a group represented by $-(RO)_p-(R'O)-R$ (a "constituent (d)"), and mentions that a constituent (f) which is a catalyst for promoting hydrolysis and condensation, such as tetraisopropoxytitanium, can also optionally be added.

Claims 1, 4 and 5

When these inventions in the present application are compared with the inventions disclosed in documents 1-3, they differ in the feature that whereas the former mention the use of a "condensate" of titanium alcoholate or the like, the latter mention the possibility of using a "hydrolysate").

However, hydrolysates of titanium alcoholates undergo some degree of condensation after hydrolysis in solution and, therefore, the "hydrolysate" in documents 1-3 will also contain a condensate to some extent.

Therefore, the condensates in these inventions in the present application are not clearly distinguishable from the hydrolysates in documents 1-3, so that these inventions in the present application can be said to be the same as inventions disclosed in documents 1-3.

Therefore, the inventions set forth in claims 1, 4 and 5 in this application are not novel over documents 1-3.

Claim 3

(A) As disclosed in document 7 (see especially column 8, lines 18-23), it is known that the stability of dispersions of photocatalytic particles such as TiO_2 is

improved by adding an organosilane oligomer with a weight-average molecular weight of 300-100,000, having an SiO bond, and having a group represented by $-(RO)_p-(R'O)-R''$ (a "constituent (d)") in addition to an organosilane or hydrolysate thereof. Therefore, a person skilled in the art could easily conceive of further adding such a known organosilane oligomer in a composition disclosed in documents 1-6.

In addition, the effects of the present invention are within a range which could be predicted by a person skilled in the art.

(B) Document 7 also indicates that tetraisopropoxytitanium can be added as a catalyst; therefore, given document 7, a person skilled in the art could easily conceive of selecting tetraisopropoxytitanium as a catalyst.

The content of constituent (b) is not specified in this invention in the present application, and tetraisopropoxytitanium in document 7 falls within the scope of the general formula for constituent (b) in this invention in the present application. Therefore, when tetraisopropoxytitanium is selected as the catalyst in document 7, the composition thereof agrees with that in this invention in the present application.

Therefore, the invention set forth in claim 3 in this application does not involve an inventive step in the light of documents 1-7.